CLAIMS

1. A spin valve sensor for a magnetic head, comprising:

a free layer structure;

an antiparallel (AP) self-pinned layer structure;

a non-magnetic electrically conductive spacer layer in between the free layer structure and the AP self-pinned layer structure;

the AP self-pinned layer structure including:

a first AP pinned layer;

a second AP pinned layer;

an antiparallel coupling (APC) layer formed between the first and the second AP pinned layers; and

at least one of the first and the second AP pinned layers comprising a cobalt layer.

2. The spin valve sensor of claim 1, wherein the at least one AP pinned layer comprising the cobalt layer consists of cobalt.

3. The spin valve sensor of claim 1, wherein the at least one AP pinned layer comprising the cobalt layer includes no iron content.

4. The spin valve sensor of claim 1, wherein the other AP pinned layer comprises a cobalt-iron layer.

5. The spin valve sensor of claim 1, wherein the first and the second AP pinned layers each comprise a cobalt layer.

6. The spin valve sensor of claim 1, wherein the second AP pinned layer comprises the cobalt layer with no iron content and the first AP pinned layer comprises a cobalt-iron layer.

7. The spin valve sensor of claim 1, wherein the AP self-pinned structure is pinned by its magnetostriction and air bearing surface (ABS) stress.

8. The spin valve sensor of claim 1, wherein a magnetostriction which self-pins the AP self-pinned layer structure is increased from use of the cobalt layer.

9. The spin valve sensor of claim 1, wherein an antiferromagnetic (AFM) layer is not utilized for pinning the AP self-pinned layer structure.

10. The spin valve sensor of claim 1, wherein a magnetostriction of the first and the second AP pinned layers and a magnetoresistive coefficient of the spin valve sensor are increased from use of the cobalt layer.

11. The spin valve sensor of claim 1, further comprising:

a seed layer which includes a layer of platinum-manganese (PtMn) with a thickness less than 75 Angstroms.

12. A disk drive, comprising:

a housing;

a magnetic disk rotatably supported in the housing;

a magnetic head assembly;

a support mounted in the housing for supporting the magnetic head assembly so as to be in a transducing relationship with the magnetic disk;

a spindle motor for rotating the magnetic disk;

an actuator positioning means connected to the support for moving the magnetic head assembly to multiple positions with respect to said magnetic disk;

a processor connected to the magnetic head assembly, to the spindle motor, and to the actuator for exchanging signals with the magnetic head assembly for controlling movement of the magnetic disk and for controlling the position of the magnetic head assembly;

the magnetic head assembly including a read head;

the read head including a spin valve sensor comprising:

a free layer structure;

an antiparallel (AP) self-pinned layer structure;

a non-magnetic electrically conductive spacer layer in between the free layer structure and the AP self-pinned layer structure;

the AP self-pinned layer structure including:

a first AP pinned layer;

a second AP pinned layer;

an antiparallel coupling (APC) layer formed between the first and the second AP pinned layer; and

at least one of the first and the second AP pinned layers comprising a cobalt layer.

13. The disk drive of claim 12, wherein the at least one of the first and the second AP pinned layers comprising the cobalt layer consists of cobalt.

14. The disk drive of claim 12, wherein the at least one of the first and the second AP pinned layers comprising the cobalt layer includes no iron content.

15. The disk drive of claim 12, wherein the other of the first and the second AP pinned layers comprises a cobalt-iron layer.

16. The disk drive of claim 12, wherein the first and the second AP pinned layer each comprises a cobalt layer.

17. The disk drive of claim 12, wherein the second AP pinned layer comprises the cobalt layer which has no iron content and the first AP pinned layer comprises a cobalt-iron layer.

18. The disk drive of claim 12, wherein the free layer structure comprises a cobalt-iron layer.

19. The disk drive of claim 12, wherein a magnetostriction which self-pins the AP self-pinned layer structure is increased from use of the cobalt layer.

20. The disk drive of claim 12, wherein an antiferromagnetic (AFM) layer is not utilized for pinning the AP self-pinned layer structure.

21. The disk drive of claim 12, wherein the spin valve sensor further comprises:

a seed layer which includes a layer of platinum-manganese (PtMn) with a thickness less than 75 Angstroms.

22. The disk drive of claim 12, wherein a magnetostriction of the first and the second AP pinned layers and a magnetoresistive coefficient of the spin valve sensor are increased from use of the cobalt layer.

23. A method of making a spin valve sensor for a magnetic head, comprising:

forming a free layer structure and an antiparallel (AP) self-pinned layer structure which are separated by a non-magnetic electrically conductive spacer layer;

forming the AP self-pinned layer structure with a first AP pinned layer, a second AP pinned layer, an antiparallel coupling (APC) layer; and

wherein at least one of the first and the second AP pinned layers is formed with a cobalt layer having no iron content, which increases a magnetostriction of the AP self-pinned layer structure for improved self-pinning.

24. The method of claim 23, wherein the at least one of the first and the second AP pinned layers consists of cobalt.

25. The method of claim 23, wherein the first and the second AP pinned layers are each formed with a cobalt layer having no iron content.

26. The method of claim 23, wherein the second AP pinned layer is formed with the cobalt layer having no iron content and the first AP pinned layer structure is formed with a cobalt-iron layer.

27. The method of claim 23, wherein the second AP pinned layer is formed with the cobalt layer having no iron content and the first AP pinned layer structure is formed with cobalt-iron, which increases a magnetoresistive coefficient $\Delta r/R$ of the spin valve sensor.

28. The method of claim 23, wherein the second AP pinned layer is formed with the cobalt layer having no iron content and the first AP pinned layer structure is formed with a cobalt-iron layer.

29. The method of claim 23, wherein an antiferromagnetic (AFM) layer is not formed for pinning the AP self-pinned layer structure.

30. The method of claim 23, wherein the free layer structure is formed with cobalt-iron.